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2 METHOD AND SYSTEM FOR PROVIDING TECHNICAL
3 SUPPORT DOCUMENTS VIA THE INTERNET

4 The present invention generally relates to an improved method
5 and system for providing technical support documents via the Internet. More
6 specifically, it relates to an improved method and system for providing
7 technical support documents via the Internet on a peripheral device connected
8 to a web server storing the requested technical support documents.

9 BACKGROUND OF THE INVENTION

10 Currently, the technical support documents of peripheral devices,
11 such as printers, are generally included on a CD Rom. The control panel of the
12 peripheral device provides some control panel messages, which tend to be very
13 short messages. As a result, they are usually not very informative or helpful.
14 However, these messages tend to be shorter because they are generally stored

1 in the firmware of the peripheral device. Firmware, which is generally used for
2 peripheral devices, is software responsible for the operations of the device, and
3 it is stored in read-only memory (ROM) or programmable ROM (PROM).
4 However, the storage capacity of the ROM tends to be very limited. Users are,
5 then, forced to access the technical support document located on CD Rom for
6 troubleshooting solutions when confronted with an error message displayed on
7 the device.

8 The problem with this prior method is that it is not always clear
9 to the user which technical support documents are relevant for a given error or
10 control panel message. This is especially true for typical users. Users
11 generally do not have the technical background needed to make such a
12 determination. Consequently, it would be extremely helpful and desirable if
13 the peripheral device itself can provide users with the relevant technical
14 support document for each particular error message displayed. There is
15 obviously a need for an improved method that can provide more direct
16 technical support from the actual peripheral device.

17 BRIEF SUMMARY OF THE INVENTION

18 The present invention is directed to an improved method and
19 system for providing technical support documents via the Internet. More
20 specifically, it relates to an improved method and system for providing
21 technical support documents via the Internet on a peripheral device connected
22 to a web server storing the requested technical support documents.

23 The present invention provides a method that includes the steps
24 of selecting an event on the device, requesting a default uniform resource
25 locator ("URL") for the selected event, and returning the technical support

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1 document relating to the selected event of the requested uniform resource
2 locator to the device.

3 The present invention further provides a system that includes a
4 peripheral device for requesting technical support documents of a selected
5 event using a default URL, and a web server for servicing the default uniform
6 resource locator by returning the relevant technical support document that
7 relates to the selected event.

8 **DESCRIPTION OF THE DRAWINGS**

9 FIGURE 1 is a schematic diagram of a network system in which
10 the present method is implemented;

11 FIG. 2 is a flow chart illustrating the preferred functionality of a
12 method of the present invention;

13 FIG. 3 illustrates an example of control panel messages when the
14 HELP button is pressed on a peripheral device with no error condition;

15 FIG. 4 illustrates an example of control panel messages when the
16 HELP button is pressed on a peripheral device with an error message of
17 "COLOR TONER LOW"; and,

18 FIG. 5 illustrates an example of a technical support document that
19 can be displayed or printed on the peripheral device.

20 **DETAILED DESCRIPTION**

21 Broadly stated, the present invention is directed to an improved
22 method and system for providing technical support documents over the
23 Internet. The method and system provide a way to provide the relevant
24 technical documents for a displayed error message straight on the peripheral
25 device. Aside from providing context sensitive technical support documents to

1 users, the present invention also allows users to access a help menu from the
2 peripheral device for obtaining the needed technical support documents.

3 An event is first selected either through the help menu or context
4 sensitive table for a particular displayed error message. Then, a default URL is
5 requested with the selected event. Consequently, a technical support document
6 ("TSD") relating to the selected event is returned to the peripheral device. It
7 should be understood that the use of "a" or "an" is also intended to mean "one
8 or more" for better readability.

9 Turning now to the drawings, and particularly FIG. 1, a
10 schematic diagram of a network system in which the present method can be
11 implemented is shown and indicated generally at 10. A web server computer
12 12 is shown to be connected to a peripheral device 14, for example a printer,
13 connected via the Internet 16. The peripheral device preferably contains the
14 web client, device state table, firmware and the default URL for accessing the
15 TSD's. The device state table 20 includes a list of the events that have been
16 logged by the device, and these events are predefined by significant
17 occurrences or happenings of the device.

18 The web server computer 12, on the other hand, services the
19 default URL 24 included in the firmware 22 of the peripheral device 14. A
20 number of TSDs 26 are made available to the peripheral device 14 by the web
21 server computer 12 when requested. Although a single web server computer
22 12 and peripheral device 14 are shown, as is known in the art, multiple web
23 server computers can be used for servicing a URL. Furthermore, in the actual
24 implementation, a great number of peripheral devices 14 are preferably
25 connected to the web server computer 12. Because the network system needed
26 for the implementation of the present invention can vary greatly in complexity
27 and size, the network topology shown in FIG. 1 is given as an example. Other

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1 network systems for implementing the present invention are contemplated and
2 are within the scope of the present invention.

3 Turning to an important aspect of the preferred embodiment of
4 the present invention, a flow chart of the preferred functionality of a method is
5 shown in FIG. 2, and indicated generally at 30. The method is initiated by a
6 user pushing HELP on the peripheral device (block 32). The HELP button on
7 the peripheral device is the preferred dedicated switch to initialize the device to
8 start the method to request a technical support document. However, other
9 implementations of the dedicated switch can be used. For example, as the
10 control panel display becomes larger and more sophisticated, an icon on the
11 display may be available to users instead of a push button. Other
12 implementations of the dedicated switch are contemplated and are within the
13 scope of the present invention.

14 The device first reads the device state table (block 34) and
15 obtains the most recently activated event that is to be selected as the selected
16 event (block 36). Furthermore, the device also obtains a default URL from the
17 firmware (block 38), which will be used later to request the TSD once the event
18 selection has been finalized. It is next determined whether a display is
19 available on the peripheral device (block 40). If a display is not available
20 (block 40), the device, using its embedded web client, continues by requesting
21 the default URL with the selected event (block 42), which is the most recently
22 activated event in this case. The most recently activated event is automatically
23 selected by the method, because the user cannot select another event through
24 the help menu on the peripheral device without the display being available.

25 If, on the other hand, a display is available on the peripheral
26 device (block 40), it is next determined whether the most recently activated
27 event obtained from the device state table indicates an error (block 44). If the

1 most recently activated event does indicate an error (block 44), the device is
2 preferably configured to again request the default URL with the selected most
3 recently activated event (block 42). From this configuration, the peripheral
4 device is able to return a context sensitive TSD to the user. In other words,
5 since the device requests a TSD related to the error event, only the relevant
6 TSD will be returned to the user.

7 However, if the most recently activated event is not an error
8 (block 44), the device is configured to request the default URL without a
9 selected event (block 46). Because a selected event was not included with the
10 request for the default URL (block 46), the web server computer 12, in
11 response, returns a help menu (block 48). The help menu is then displayed to
12 the user (block 50), and the user can then accordingly select another event from
13 the menu (block 52). A request for the default URL with the selected event
14 will again be sent to the web server computer (block 42). In the preferred
15 embodiment, the help menu is located on the web server computer, and a
16 request for the default URL without a selected event will prompt the web
17 server computer to return a help menu. However, other implementations can
18 be used, such as storing the help menu with the firmware on the device. In this
19 case, when a request for the default URL is prompted without a selected event,
20 the device can be configured to automatically return the help menu on the
21 display. There may be other implementations with slight modifications,
22 however these various implementations are contemplated and are within the
23 scope of the present invention.

24 Once the selected event is obtained, either from the device state
25 table (block 36) or from the user help menu (block 52), a request for the default
26 URL with the selected event is made upon the web server computer (block 42),
27 which prompts it to return a TSD relating to the selected event (block 54).

1 After receiving the TSD (block 54), the device reads the device configuration
2 from the firmware (block 56) to determine whether the TSD should be printed
3 or displayed (block 58). Accordingly, the TSD is printed (block 60) or
4 displayed (block 62) to the user, depending on the device configuration. In
5 peripheral devices without a display, the device configuration can only be
6 defined to print the TSD. However, for the peripheral devices with a display, it
7 is contemplated that users can select the default device configuration to print or
8 display the TSD.

9 Because the functionalities of each peripheral device can vary
10 greatly, the preferred method can also be altered as a result. It is contemplated
11 that the present method can be changed to accommodate different devices and
12 their particular models as well. As a result, it should be understood that these
13 other methods are within the scope of the present invention.

14 An example of control panel messages when the HELP button is
15 pressed on the peripheral device when there is no error condition is shown in
16 FIG. 3 and indicated generally at 70. More specifically, FIG. 3 shows an
17 example of the help menu that can be displayed to users when the most recently
18 activated event from the device state table is not an error. From this help
19 menu, users can choose an event or a topic for requesting a TSD from the web
20 server computer. For this particular example, the peripheral device is a printer
21 with a display control panel. Consequently, the events are configured and
22 designed to fit the printer. However, the present invention can also work with
23 any type of peripheral devices, such as a scanner or a fax machine. The help
24 menu can vary as a result. Because the display on the control panel is generally
25 small in size, typically only two to three lines can be displayed at a time. In
26 this example, the dashed line is to indicated when users must scrolled down to
27 see the next message.

1 Turning to another example, an exemplary display of the control
2 panel messages of a printer when the HELP button is pressed on an error
3 message of "COLOR TONER LOW" is shown in FIG. 4 and indicated
4 generally at 80. In this scenario, a printer is displaying a "COLOR TONER
5 LOW ?" message on the control panel. A user presses the help button on the
6 printer, which prompts the device to display the panel messages shown in FIG.
7 4. In this particular example, the user can select to print the help document
8 (i.e., TSD) from the web. If selected, the device sends a URL request with the
9 event defining the "COLOR TONER LOW" message to the web server
10 computer 12, and a TSD relating to that event will be printed on the device.

11 An example of a technical support document that can be
12 displayed or printed on the peripheral device is shown in FIG. 5. As shown,
13 the TSD provides a detailed description to solve a particular problem, specially
14 an error when printer will not pull paper from a particular tray. However, in
15 this example of the TSD, no figures are shown. But, since the capacity of the
16 memory storage is no longer a major concern, figures for user friendly
17 instructions can be included for clarity.

18 Because the TSDs are stored on the web server computer, very
19 extensive and informative documents can be provided to users. This is so
20 because the limited memory storage of the ROM is no longer being used for
21 storing the TSDs for the peripheral device. But at the same time, the web
22 server computer is able to return the TSD that is most relevant to an error that
23 the device might be experiencing. Furthermore, since the TSDs needed are
24 stored on the web server computer, any updates or changes can easily be
25 accomplished at one central location for devices that were sold throughout the
26 world.

1 From the foregoing description, it should be understood that an
2 improved method and system for providing technical support documents via
3 the Internet has been shown and described, which has many desirable attributes
4 and advantages. The method and system provide a way for users to easily
5 obtain context sensitive or requested technical support documents via the
6 Internet. As a result of these documents being stored on a web server computer
7 outside of the peripheral device, extensive and informative graphical technical
8 support documents can be provided to users. Furthermore, because the present
9 invention provides for a central location to obtain these documents, any
10 updating or changing of these documents can be easily achieved with fewer
11 efforts.

12 While various embodiments of the present invention have been
13 shown and described, it should be understood that other modifications,
14 substitutions and alternatives are apparent to one of ordinary skill in the art.
15 Such modifications, substitutions and alternatives can be made without
16 departing from the spirit and scope of the invention, which should be
17 determined from the appended claims.

18 Various features of the invention are set forth in the appended
19 claims.